CLAIMS

1) A molecule binding to a target comprising an EP motif having the following sequence:

$(X\text{-}(EP)_n\text{-}Y\text{-}(EP)_m\text{-}Z)_p$

wherein X, Y and Z may be identical or different and comprise a sequence of 0 to 10 amino acids, identical or different, n and m are integers between 0 to 20, preferably between 3 to 10, with at least one of n or m being different from 0, and p is an integer between 1 and 10.

2) The molecule according to claim 1, which binds to an EP motif selected from the group consisting of EPEPEPEPEPEPEPEPEP (SEQ ID N° 3), EPEPEPQLEPEP (SEQ ID N° 4), EPQDEPPEPQLELQVEPEPELEQ (SEQ ID N° 5), and EPEPEPEPEPEP (SEQ ID N° 6).

3) The molecule according to claim 1, which binds to an amino acid sequence comprising at least 5 EP motifs over a 19 amino acid segment.

4) The molecule according to claim 1, wherein the molecule is selected from the group consisting of a peptide, a polypetide or a protein.

5) The polypeptide according to claim 4, comprising the amino acid sequence of LAP identified by SEQ ID No.:l, a homolog, a fragment or a derivative thereof.

6) The polypeptide according to claim 4, comprising the carboxy-terminal amino acid sequence of LAP identified by SEQ ID No.:2, a homolog, a fragment or a derivative thereof.

7) A nucleic acid molecule comprising a polynucleotide sequence coding a polypeptide according to claim 4.

8) The nucleic acid molecule according to claim 7, comprising the polynucleotide sequence identified by SEQ ID No.:8, a fragment or a derivative thereof.

9) An expression vector comprising a nucleic acid molecule according to claim 7.

10) An expression vector comprising a nucleic acid molecule according to claim 8.

11) A host cell transformed with an expression vector according to claim 9.

12) A host cell transformed with an expression vector according to claim 10.

13) A process for manufacturing a molecule binding to a target comprising an EP motif having the following sequence:

$(X\text{-}(EP)_n\text{-}Y\text{-}(EP)_m\text{-}Z)_p$

wherein X, Y and Z may be identical or different and comprise a sequence of 0 to 10 amino acids, identical or different, n and m are integers between 0 to 20, preferably between 3 to 10, with at least one of n or m being different from 0, and p is an integer between 1 and 10, comprising:

a) transfection of a host cell with an expression vector according to claim 5 to obtain expression of the polypeptide, and

b) isolation and purification of the polypeptide from the transfected host cell.

14) A pharmaceutical composition comprising as active agent at least one molecule according to claim 1.

15) The pharmaceutical composition according to claim 14, wherein said molecule is a LAP agonist.

16) The pharmaceutical composition according to claim 14, wherein said molecule is a LAP antagonist.

17) A method of treating immune-related pathologies comprising administering a therapeutically effective amount of a molecule according to claim 1 to a patient in need thereof.

18) A method of treating the immune response comprising administering a therapeutically effective amount of a molecule according to claim 1 to a patient in need thereof.

19) A method of enhancing the development of CD4 or CD8 T-cell populations comprising administering a therapeutically effective amount of a molecule according to claim 1 to a patient in need thereof.

20) A method of suppressing the development of CD4 or CD8 T-cell populations comprising administering a therapeutically effective amount of a molecule according to claim 1 to a patient in need thereof.

21) The method according to claim 7, wherein said molecule is a LAP agonist.

22) The method according to claim 7, wherein said molecule is a LAP antagonist

23) A method for screening drugs comprising:

contacting a candidate drug with a molecule according to claim 1 in the presence of a target EP motif, and

measuring resulting binding of the molecule to the target.

24) The method according to claim 23, wherein the drugs are selected from the group consisting of drugs able to activate T-cell, drugs enhancing development of CD4 or CD8 T-cell populations, drugs suppressing development of CD4 or CD8 T-cell populations and drugs active in platelet activation.

25) The method according to claim 23, wherein the molecule is a LAP polypeptide.

26) Antibodies directed to a specific epitope of a polypeptide selected from the group consisting of polypeptides or peptides identified by SEQ ID NO:1, SEQ ID NO:2, SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6, and SEQ ID NO:9.

27) The antibodies according to claim 26, wherein the antibodies are monoclonal antibodies or Fab, Fab', F(ab') or Fv fragments thereof.

28) A monoclonal antibody or a monoclonal antibody derivative that specifically binds a peptide selected from the group consisting of polypeptides or peptides identified by SEQ ID NO:l, SEQ ID NO:2, SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6 and SEQ ID NO:9, the monoclonal antibody derivative being selected from the group consisting of a monoclonal antibody conjugated to a cytotoxic agent or a radioisotope, and Fab, Fab' or $F(ab')_2$ fragments of said monoclonal antibody conjugated to a cytotoxic agent or radioisotope.

29) A hybridoma cell line producing the monoclonal antibody of claim 28.

30) A therapeutic composition comprising as an active ingredient an antibody according to claim 26.